

A. Independent claims 1, 10 and 14

Each of the independent claims includes the following feature: “an optical ignition subsystem independent of, and positioned apart from, the detonation banks.” (See claim 1, for example). *Winfree*, the Examiner’s base reference, does not include an independent optical ignition subsystem that is positioned apart from the detonation banks, as generally admitted by the Examiner. (Non-Final at page 2). Instead, *Winfree* includes igniters 69 in each of its engines 15, which would be the equivalent of the claimed chambers. In fact, *Winfree* explains that “it is preferred” that each of its engines 15 includes “**at least four igniters 69.**” (*Winfree* at col. 4, ll. 12-21) (emphasis added) (See also *Winfree*’s Figure 1). Therefore, because *Winfree* expressly prefers to include at least four igniters in **each** of its engines 15, *Winfree* teaches away from the claimed independent ignition subsystem. Accordingly, and regardless of what *Early* teaches, the claims are non-obvious over the cited art, and the rejection should be withdrawn.

The Examiner is respectfully reminded of the following examining guideline: “[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” (MPEP § 2141.02) (emphasis in original).

B. Independent claim 10 and dependent claim 2

In addition to the above, these claims are separately patentable. Claims 10 and 2 include the feature of “an optical multiplexing apparatus for multiplexing the optical energy such that the optical energy sequentially detonates banks of the detonation system and simultaneously detonates chambers contained within each bank.” (See claim 10, for example). In other words, Applicant’s banks 20 detonate sequentially, while the chambers 22 in each bank detonate simultaneously. See Applicant’s Figures 2, for example.

Neither *Winfree* nor *Early* discloses this feature. *Winfree*, for one, discloses that each of its engines 15, which are analogous to the claimed chambers, “**will detonate at a different time.**” (*Winfree* at col. 5, ll. 37-40) (emphasis added). *Early* similarly does not disclose this feature. Notably, the most recent Non-Final has failed to even address this “optical multiplexing” feature. Therefore, there is no prima facie case of obviousness for these claims. Claims 10 and 2 are separately patentable over the cited art for at least this reason.

Further, even if *Early* could be said to teach this claimed feature, *Winfree* teaches away from the modification. Again, *Winfree* discloses that each of its engines 15 “will detonate at a different time” to allow the cluster 11 to “run smoothly” with “very little bypass air.” (*Winfree* at col. 5, ll. 37-40). As explained later in *Winfree*, reducing bypass air allows for a smooth and more efficient operation. (*Winfree* at col. 6, ll. 15-17). Therefore, *Winfree* teaches away from detonating its engines simultaneously, as doing so would reduce *Winfree*’s efficiency.

C. Claims 9 and 25

Neither *Winfree* nor *Early* discloses the optical intensity equation recited in these dependent claims. Further, this feature appears have been unaddressed in the recent Non-Final. At any rate, there is no prima facie case of obviousness for these claims as well, and therefore these claims are patentable over the cited art.

III. CLOSING

It is respectfully submitted that the present application is in condition for allowance, and a Notice to that effect is earnestly solicited. If any minor issues remain, the Examiner is urged to contact the undersigned at the number indicated below.

Applicant believes that no additional fees are necessary, however, the Commissioner is authorized to charge Deposit Account No. 21-0279 in the name of United Technologies Corporation for any additional fees or credit the account for any overpayment.

Respectfully submitted,

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Dated: May 13, 2011